

# ACEROS RÁPIDOS

## Formatos disponibles

[Productos largos\\*](#)
[Chapas](#)

\* ) Presented data refer exclusively to long products. Please observe the detailed explanations at the end of the data sheet (pdf).

## Descripción

BÖHLER S200 - "El antiguo"

Este acero rápido tradicional al tungsteno muestra su clase en un entorno de trabajo difícil tanto en el pasado como en el presente. Alta dureza en caliente y una buena resistencia al desgaste caracterizan a esta calidad.

## Método de obtención

[Convencional](#)

## Propiedades

- > Dureza y Ductilidad : buena
- > Resistencia al desgaste : alto
- > Resistencia a la compresión : buena
- > Estabilidad de los bordes : buena
- > Afilabilidad : buena
- > Dureza en caliente (dureza roja) : alto

## Aplicaciones

- > Herramientas de corte especiales
- > Talladura de engranajes, herramientas de rasurado y perfiladoras
- > Brocas helicoidales y grifos
- > Cutting-typical instruments and knives
- > Cuchillas de máquinas (fabricantes)
- > Puntas de brocas
- > Thread rolling (ES)

## Datos técnicos

Designación		Estándares	
1.3355	SEL	4957	EN ISO
T12001	UNS	A600	ASTM
HS18-0-1	EN		
T1	AISI		

## Composición Química

C	Si	Mn	Cr	V	W
0,75	0,25	0,30	4,10	1,10	18,00

## Características

	Resistencia a la compresión	Aptitud para el rectificado	Dureza en caliente	Tenacidad	Resistencia al desgaste	Retención del filo de la navaja
<b>BÖHLER S200</b>	★★★	★★	★★★	★★	★★★	★★
<b>BÖHLER S400</b>	★★★	★★★	★★★	★★★	★★	★★
<b>BÖHLER S401</b>	★★	★★★	★★	★★★	★★	★★★
<b>BÖHLER S404</b>	★★	★★★	★★	★★★	★★	★★
<b>BÖHLER S405</b>	★★★	★★★	★★	★★★	★★	★★
<b>BÖHLER S500</b>	★★★★	★★★	★★★★	★★	★★★	★★★
<b>BÖHLER S600</b>	★★★	★★★	★★★	★★	★★	★★★
<b>BÖHLER S607</b>	★★★	★★★	★★★	★★	★★★	★★★
<b>BÖHLER S630</b>	★★★	★★★	★★★	★★	★★	★★★
<b>BÖHLER S705</b>	★★★	★★★	★★★★	★★	★★	★★★★
<b>BÖHLER S730</b>	★★★	★★★	★★★★	★★	★★	★★★★

## Estado de suministro

### recocido

Dureza (HB)	máx. 280
Resistencia a la tracción (N/mm <sup>2</sup> )	máx. 980

## Tratamiento térmico

### Recocido

Temperatura	770 a 840 °C	Controlled slow cooling in furnace (10 to 20°C/h / (50 to 68°F/h) to approx. 600°C (1112°F), air cooling.
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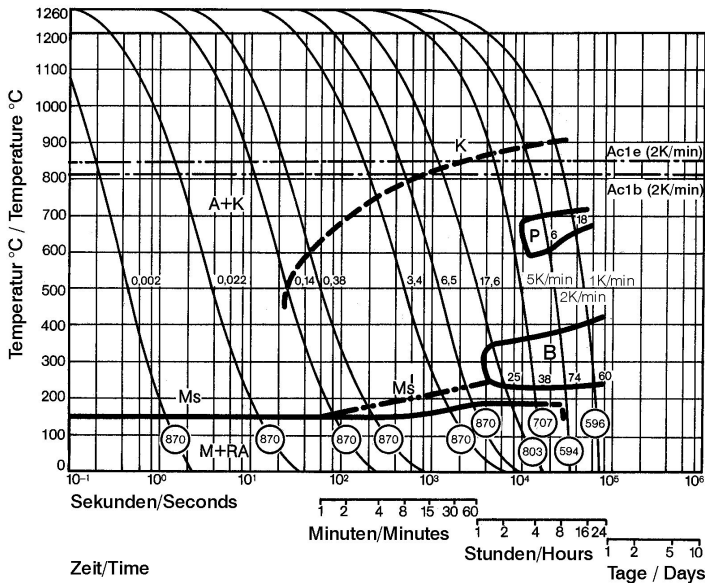
### Alivio de tensiones

Temperatura	600 a 650 °C	Slow cooling in furnace. To relieve stresses set up by extensive machining or in tools of intricate shape. After through heating, hold in neutral atmosphere for 1 to 2 hours.
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### Temple y revenido

Temperatura	1.250 a 1.290 °C	Salt bath, vacuum Preheating: 1st stage ~ 500 °C (930 °F), 2nd stage ~ 850 °C (1560 °F), 3rd stage ~ 1050 °C (1920 °F) Austenitising: 1250 - 1290 °C (2280 - 2350 °F), holding time after complete heating 80 seconds, maximum 150 seconds, to avoid material damage due to overheating. Quenching: oil, warm bath (500 - 550 °C (930 - 1020 °F)), vacuum (nitrogen)
Temperatura	550 a 580 °C	Slow heating to tempering temperature immediately after austenitising. Dwell time in the furnace 1 hour per 20 mm material thickness (at least 1 hour) Slow cooling to room temperature 3 tempering cycles recommended Hardness see tempering chart

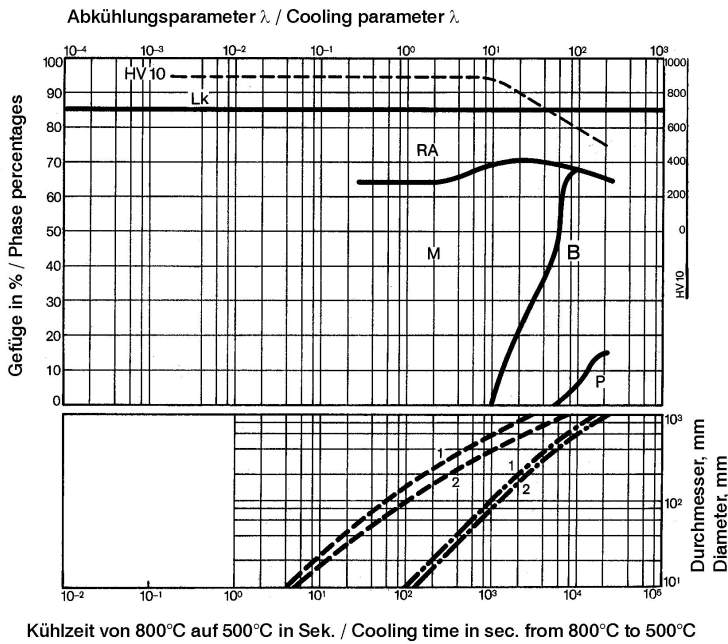
Continuous cooling CCT curves



Austenitising temperature: 1260°C (2300°F)  
Holding time: 150 seconds

○ ...Vickers hardness  
6 ... 18 phase percentages  
0.002 ... 17.6 cooling parameter, i.e. duration of cooling from 800-500°C (1472-932°F) in  $s \times 10^{-2}$   
5 K/min ... 1 K/min cooling rate in K/min in the 800 - 500°C (1472 - 932°F) range  
Ms-Ms'...range of grain boundary martensite formation

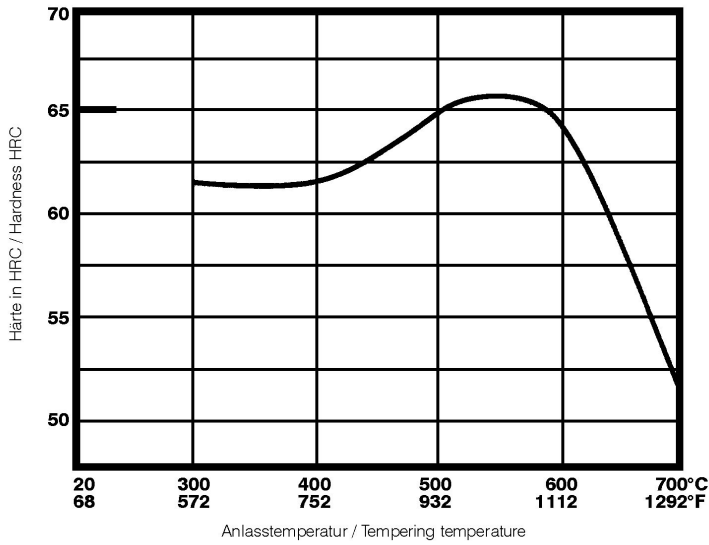
Quantitative phase diagram



- A .. Austenite
- B .. Bainite
- K .. Carbide
- M .. Martensite
- P .. Pearlite
- Lk .. Ledeburite carbide
- RA .. Retained austenite

- Oil cooling
- .-.- Air cooling
- 1 ... Edge or face
- 2 ... Core

**Tempering Chart**



Hardening temperature: 1260°C (2300°F)

Specimen size: square 20 mm

**Propiedades físicas**

Temperatura (°C)	20
Densidad (kg/dm <sup>3</sup> )	8,7
Conductividad térmica (W/(m.K))	19
Calor específico (kJ/kg K)	0,46
Resistencia eléctrica específica (Ohm.mm <sup>2</sup> /m)	0,5
Módulo de elasticidad (10 <sup>3</sup> N/mm <sup>2</sup> )	217

## Expansión térmica

Temperatura (°C)	100	200	300	400	500	600	700
Expansión térmica (10 <sup>-6</sup> m/(m.K))	10	10,5	10,8	11,2	11,3	11,4	11,6

**Long Products:** For additional specifications and technical requirements, please contact our regional voestalpine BÖHLER sales companies.

**Sheet & Plates:** Product Variant may differ in terms of melting process, technical data, delivery, and surface condition as well as available product dimensions. Please contact voestalpine BÖHLER Bleche GmbH & Co KG.

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